IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

GENERAL ELECTRIC COMPANY, *Plaintiff*, v. MITSUBISHI HEAVY INDUSTRIES, LTD., and MITSUBISHI POWER SYSTEMS AMERICAS, INC., *Defendants*.	CIVIL ACTION NO. 3:10-CV-276-F

OPENING CLAIM CONSTRUCTION BRIEF OF MITSUBISHI HEAVY INDUSTRIES, LTD., AND MITSUBISHI POWER SYSTEMS AMERICAS, INC.

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I. INTRODUCTION

The Court's legal task of interpreting the scope of patent claims requires understanding the context in which the claims were obtained and the context in which the claims are asserted. The context in which the claims were obtained includes the claim language itself, the description of the invention in the patent specification, and the prosecution of the patent in the U.S. Patent and Trademark Office ("PTO"). This so-called intrinsic evidence helps the Court understand the claimed invention. The context in which the claims are asserted includes the products accused of infringement and the prior art raised in defense. The accused products and prior art are important to help the Court understand the claim interpretation issues that need to be resolved, even though they are not used to construe the claims.

In reaching its proposed claim constructions, Mitsubishi has rigorously analyzed the intrinsic evidence to understand the claimed inventions. In addition, Mitsubishi has proposed claim constructions that address ambiguities in the claims that need to be resolved before infringement and validity are assessed. In contrast, GE has proposed claim constructions that are little more than paraphrasing of disputed claim terms. Such paraphrasing does nothing to elucidate the claimed invention. And such paraphrasing does nothing to cure ambiguities in the claims that need to be resolved before infringement and validity are assessed.

Mitsubishi respectfully suggests that the Court adopt Mitsubishi's proposed claim constructions. But what is most important is that the Court resolve the ambiguities in the claims so that Mitsubishi can defend itself. If the claims are construed reasonably, Mitsubishi does not infringe. If the claims are broadly construed, GE's patents are invalid over the prior art. In any event, claim scope should not be left ambiguous, giving GE an opportunity to argue infringement as if the claims were broad and argue validity as if the claims were narrow.

II. TECHNICAL BACKGROUND

Modern wind turbine generators include a nacelle (102), a tower (104), and rotor blades (108) connected to a hub (110). '705 patent, Fig. 1.

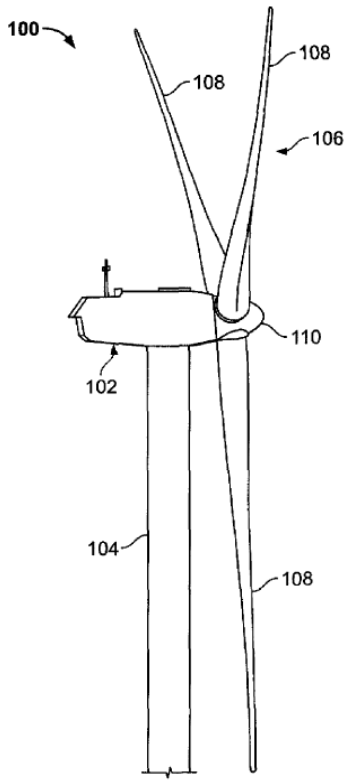


FIG. 1

The nacelle (also called a "gondola" or "machine housing") consists of a base frame and an enclosure (also called a "cover" or "weather shield") that houses an electric generator that is connected to the hub through a rotor shaft and a gear. '055 patent, col. 1:15-25; '705 patent, col. 1:19-22.[1] Wind causes the rotor blades and hub to rotate, thereby rotating the drive shaft and gear, which powers the generator. *See* '705 patent, col. 1:5-19.

The base frame is the support structure that carries the working components housed within the nacelle and connects the nacelle to the top of the tower. These working components

[1] *See also* Ex. 3 at 839.

include the hub, rotor shaft, gear, and generator (collectively called the "drive train") and a separate motor that rotates the nacelle to keep the rotor blades facing into the wind (called an "azimuthal drive"). '055 patent, col. 1:15-28. To facilitate shipment and assembly of large wind turbines, manufacturers construct the nacelle as two or more modules, each containing part of the base frame. *Id.* at col. 1:28-35, 1:46-49. These modules are assembled at the wind turbine construction site by bolting the base frame together. *Id.* The '055 patent[2] is directed to a base frame constructed from two parts joined together at a specially shaped connection point.

Wind turbines supply electricity through the "utility grid," which carries the electricity from wind turbines and other power sources to homes, businesses, and other consumers of electricity. From time to time, the voltage of the utility grid fluctuates, and such fluctuations can cause components of the wind turbine to malfunction and become damaged. '705 patent, col. 1:28-34. To prevent such damage, older wind turbines would disconnect from the utility grid whenever grid voltage fluctuated. In recent years, however, utility companies have required wind turbines to remain connected to the utility grid for at least a short period of time when grid voltage fluctuates. *Id.* at col. 6:63-67. For example, grid-connection standards published by the Federal Energy Regulatory Commission ("FERC") and the Electricity Reliability Council of Texas ("ERCOT") require wind turbines to remain connected to the utility grid for at least 0.15 seconds when grid voltage drops to zero volts. The '705 patent[3] is directed to a method of configuring wind turbines (and other electrical machines) to remain connected to the utility grid during and after grid voltage fluctuations.

[2] The "'055 patent" refers to asserted U.S. Patent No. 6,879,055, attached as Exhibit 1.

[3] The "'705 patent" refers to asserted U.S. Patent No. 7,629,705, attached as Exhibit 2.

III. LEGAL STANDARDS GOVERNING CLAIM CONSTRUCTION

"[T]he claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). Claim construction begins with the words of the claim and focuses on determining how a person of ordinary skill in the art would have understood the claim terms at the time of the invention. *Id.* at 1312-13. The patent and its prosecution history "usually provide[] the technological and temporal context to enable the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of the invention." *Id.* at 1313.

Persons of ordinary skill in the art are deemed to read the claim terms "not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* A patent's specification accordingly "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Id*. at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Statements in the specification that certain features are, or are not, part of the "present invention," for example, may indicate that the patent claims include, or do not include, certain features. *Honeywell Int'l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1318, 1318 (Fed. Cir. 2006) ("The public is entitled to take the patentee at his word . . . .").

The patent's "prosecution history" consists of "the complete record of the proceedings before the PTO[4] and includes the prior art cited during the examination of the patent." *Phillips*, 415 F.3d at 1317. Communications between the patent applicant and the PTO may demonstrate how the inventor understood the invention and whether the inventor narrowed the scope of the claims in the course of prosecution. *Id*.; *see also Markman v. Westview Instruments, Inc.*,

[4] The "PTO" refers to the United States Patent and Trademark Office.

52 F.3d 967, 980 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996) (the "undisputed public record" of PTO proceedings is of "primary significance in understanding the claims").

While the intrinsic evidence—the claims, the specification of the patent, and its prosecution history—is of primary importance in construing patent claims, courts may also consider extrinsic evidence to "educate [themselves] regarding the field of the invention" and to "determine what a person of ordinary skill in the art would understand claim terms to mean." *Phillips*, 415 F.3d at 1319. Extrinsic evidence, however, is "less reliable than the patent and its prosecution history in determining how to read claim terms," and must be considered "in the context of the intrinsic evidence." *Id.* at 1318-19. Dictionary definitions, for example, may be used to construe claims, but are less significant than the intrinsic evidence. *See id.* at 1317, 1319.

In addition, "the context provided by an analysis of the accused device [is important] when ruling on claim construction." *Jang v. Boston Scientific Corp.*, 532 F.3d 1330, 1337 (Fed. Cir. 2008). As the Federal Circuit has explained, "[w]hile a trial court should certainly not prejudge the ultimate infringement analysis by construing claims with an aim to include or exclude an accused product or process, knowledge of that product or process provides meaningful context for … claim construction." *Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1326-27 (Fed. Cir. 2006).

IV. THE '055 PATENT

A. Overview of the '055 Patent and the Parties' Dispute

The '055 patent, entitled "Base Frame for Mounting the Shaft of the Rotor of a Wind Power Plant onto the Plant Tower," claims a two-piece base frame for a wind turbine. The base frame consists of an "upper part" carrying the drive train and a "lower part" carrying the azimuthal drive. The patent requires these two parts of the base frame to be joined at a specially shaped "connection point" that is elongated in the direction of the wind turbine rotor. According

to the patent, the elongated shape of this connection point strengthens the base frame against forces acting on the wind turbine drive train.

Construing the "connection point" recited in the claims of the '055 patent is important, inter alia, because of the way in which the base frame of Mitsubishi's wind turbine is joined together. Instead of an elongated connection point, the upper and lower parts of the base frame in Mitsubishi's wind turbine are joined by bolts arranged in a perfect circle. In view of this circular connection, GE's theory of infringement focuses on the fiberglass cover that surrounds Mitsubishi's nacelle and protects the base frame and drive train from the weather. To support this argument, GE suggests that the claimed base frame "connection point" can encompass the connection between the upper and lower parts of a fiberglass cover. Mitsubishi, looking to the claim language and the other intrinsic evidence, disagrees.

The construction of the term "connection point" will also impact validity issues. During prosecution before the PTO, GE relied on the elongated "connection point" as a distinguishing feature over certain prior art wind turbines that would have otherwise negated patentability. Moreover, certain prior art wind turbines have a base frame with a rectangular upper part and a circular lower part, which are joined together by bolts arranged in an elongated pattern. The significance of this prior art will depend in part on whether the claimed "connection point" is merely "an area of contact" between the upper and lower parts (as GE contends) or "the point where the lower part and the upper part are joined together" (as Mitsubishi contends).

B. Asserted Claims of the '055 Patent

GE has asserted claims 1, 3, and 12 of the '055 patent. Claims 3 and 12 depend from claim 1, and include all of its limitations. The parties dispute the construction of only one limitation of claim 1, indicated in bold below:

> 1. An apparatus, comprising:
>
> A base frame for the arrangement of a drive train, which is driven by a wind-driven rotor of a wind power plant, on the tower of the wind power plant on which the base frame is affixed with an essentially horizontal orientation of the rotor axis so that it can rotate azimuthally around the essentially vertical axis of the tower
>
> and is constructed from a discrete upper part that carries the drive train and a discrete lower part that has an azimuthal drive device that is attachably joined with the upper part at a **connection point**,
>
> wherein the lower part provides for azimuthal rotation around the essentially vertical axis of the tower,
>
> wherein the **connection point** extends along an essentially horizontal cross-section that has a larger dimension in the direction of the rotor axis than in the direction perpendicular to that.

The parties agree that the following claim limitations should be construed as set forth below, and respectfully ask the Court to adopt the proposed constructions:

- "drive train" should be construed as "a wind turbine rotor hub, rotor shaft and an electric generator connected through a gear(s)"; and
- "base frame" should be construed as "a support structure that carries the drive train and the azimuthal drive device."

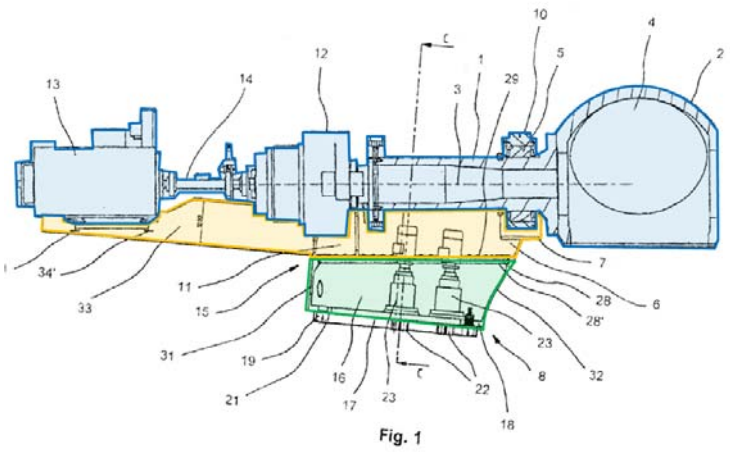
C. Additional Intrinsic Evidence Relevant to Construing "Connection Point"

In addition to the claim language of the '055 patent—which require a base frame constructed from "a discrete upper part" and "a discrete lower part … attachably joined with the upper part" at a specially shaped connection point—the patent's specification and prosecution history are instructive in construing the claimed "connection point."

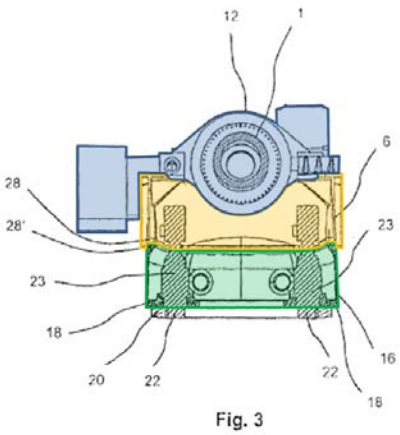
1. Specification of the '055 patent

The '055 patent describes a two-part base frame used to support the working components inside the nacelle of a wind turbine. An upper part of this base frame carries the turbine's drive

train, including the turbine hub, drive shaft, gear, and generator. '055 patent, col. 1:5-28. A lower part of the base frame carries the azimuthal drive motor. *Id*. at col. 1:5-14. The annotated versions of Figures 1 and 3 below illustrate the upper part of the base frame (in yellow), the lower part of the base frame (in green), and the drive train (in blue).



'055 Patent, Fig. 1 (annotated)



'055 Patent, Fig. 3 (annotated)

The patent teaches that the connection point between the upper and lower parts of the base frame "extends along an essentially horizontal cross-section" and has a "larger dimension in the direction of the rotor axis than in the direction perpendicular to [the rotor axis]." *Id*. at col. 1:41-45. In other words, the connection point is elongated in the direction of the wind turbine's rotor. *Id.* at col. 2:20-25. Figure 4 of the '055 patent, reproduced below, is "a view of a connection point between a lower and an upper part of … the base frame shown in FIG. 1 to 3." *Id*. at col. 4:11-13. This figure clearly illustrates the elongated shape of the connection point. *Id.* at col. 5:20-23.

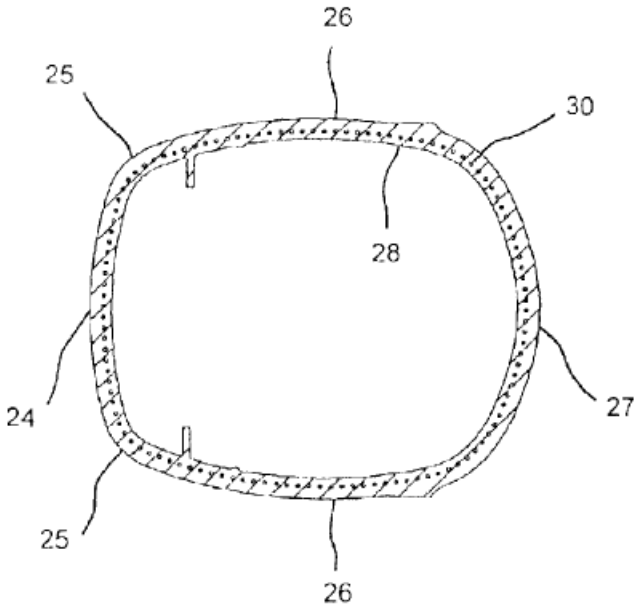


Fig. 4

As illustrated in Figure 4, a flange (28) on the bottom edge of the upper part of the base frame includes bore holes (30) allowing bolts to connect the upper and lower parts of the base frame together. *Id*. at col. 5:34-36, 2:38-42. These bolts pass through the bore holes (30) in the flange on the upper part of the base frame and are screwed into a flange on the top edge of the lower part of the base frame. *Id*. at col. 5:39-44. The bolts "screw the flanges tightly together during the final assembly," allowing the upper and lower parts to form the base frame. *Id*. at col. 2:45-51, Abstract. The patent indicates that flange (28) and a corresponding flange on the lower part of the base frame are located "at the connection point," but does not equate the flanges themselves with the connection point. *Id*. at col. 5:34-36. Similarly, claim 4 of the patent recites both "flanges" and a "connection point," indicating that they constitute different structures.

In addition to joining two parts of the base frame together to form a unitary whole, the connection point transmits forces acting on the wind turbine drive train to the tower. The '055 patent teaches that the disclosed connection point is "especially favorable in a structural-mechanical manner with regard to the forces that stress it." *Id.* at col. 1:64-66. According to the

specification, because forces acting on the wind turbine rotor are introduced along the rotor axis and into the upper part of the base frame, the oblong shape of the connection point provides benefits. *Id*. at col. 1:64-2:3. In particular, "[s]ince the main introduction of force is done via the rotor … [and] in the direction of its rotor axis, an optimal adaptation of the connection point is achieved in a structural-mechanical manner by the arrangement of the connection point in the area of the elongated cross-section contours." *Id.* at col. 2:20-25. The shape of the connection point purportedly enables the base frame to achieve the stated purpose of the invention: to create a base frame that "makes it easier to accomplish transport and assembly work … **while having sufficient stability**." *Id*. at col. 1:36-40 (emphasis added).

The '055 patent distinguishes the wind turbine base frame from the machine housing. *Id*. at col. 1:15-25. The base frame carries the drive train and counteracts forces acting on the wind turbine. *Id*. at col. 1:64-2:3, 1:5-14. The machine housing, discussed only briefly in the first column of the specification, "houses" the drive train and other wind turbine components, thus serving as a protective cover. *See id.* at col. 1:20-31, 1:51-56. The base frame is illustrated in the patent's figures, explained in the detailed description, and recited in its claims. *Id*. at col. 4:3-13. The cover is not depicted in the patent's figures or recited in its claims. Thus, the patent gives no suggestion whatsoever that the cover serves as part of the base frame or could serve as a "connection point" between the upper and lower parts of the base frame.

2. Prosecution history of the '055 patent

As originally filed, claim 1 of the '055 patent required a base frame having an upper part "combined with" a lower part at a connection point. The PTO examiner rejected that claim as unpatentable in view of the Partmann prior art reference (EP 0945613 A2), which illustrates a base frame having an upper part and a lower part welded together during assembly. Ex. 4 at 2-3. In response, GE amended claim 1 to require a base frame constructed of a "discrete" upper part

and a "discrete" lower part, where the discrete lower part "is attachably joined with the upper part at a connection point." Ex. 5 at 2. Relying on this amendment, GE argued that the base frame described in the Partmann reference "is a single integral unit," not a frame "formed by two discrete attachable/detachable sections that each contain[] specific components." *Id*. at 8. To further distinguish Partmann, GE argued that the reference does not teach a connection point located "where the upper part of the frame attachably joins to the lower part of that frame" and extending along an "essentially horizontal cross-section, which has a larger dimension in the direction of the rotor axis than in the direction perpendicular to that," as required by claim 1. *Id*.

In response to a subsequent rejection of claim 1 as unpatentable in view of Partmann and the Jacobs prior art reference (U.S. Patent No. 4,068,131), GE again stressed that the claimed connection point joins the base frame together. Ex. 6 at 10. The applicants distinguished Jacobs because it discloses "a gear case and a **cover** for the gear case, which are secured by fasteners," not a single frame formed from two parts. *Id*. (emphasis added). In particular, GE argued that "[c]laim 1's discrete parts are put together to form a complete mechanical unit," while in Jacobs, "[t]he gear drive by itself is a working part" and "[t]he second part is merely a **cover**." *Id*. at 10-11 (emphasis added). Thus, according to GE during the patent prosecution, claim 1 requires "a base frame constructed from a discrete upper part and a discrete lower part that is attachably joined with the upper part at a connection point," not a base frame and a "second part [that] is merely a cover." *See id.*

D. Proper Construction of the Disputed Claim Terms

"connection point"	
GE's Proposed Construction	**Mitsubishi's Proposed Construction**
area of contact between the upper part and the lower part of the base frame	the point where the lower part and the upper part are joined together to form the base frame

The constructions that the parties offer for the claimed "connection point" differ in three important respects:

- First, Mitsubishi's proposed construction requires that the upper and lower parts of the base frame be "joined together" at the connection point. GE's proposed construction only requires that the upper part and lower part of the base frame "contact" one another, eliminating the requirement of a "connection."
- Second, Mitsubishi's proposed construction limits the connection point to the junction between parts of the wind turbine base frame. Thus, junctions with or between other wind turbine components—such as its cover, its drive train, or its tower—cannot correspond to the claimed connection point. GE's proposed construction is vague as to this requirement.
- Third, Mitsubishi's construction does not expand the connection point to a vague, undefined "area" as GE proposes in its construction. The specification repeatedly refers to the connection between the upper and lower parts of the base frame as a "point," not an "area," reserving the latter term for use when referring to a loose sense of proximity.

These three distinctions highlight why Mitsubishi's proposed construction more closely aligns with the language of claim 1, the teachings of the specification, and the prosecution history of the '055 patent. And because Mitsubishi's proposed construction comports with the

intrinsic evidence and provides greater clarity, GE's effort to recast the claimed "point" of "connection" as a vague "area" of "contact" should be rejected.

1. The claimed "connection point" expressly requires "connection"

The plain language of claim 1 requires a "connection" point, not a "contact" point. The claim specifies the lower part of the base frame is "attachably joined with the upper part at [the] connection point," requiring the connection point to be a point of joinder, not merely contact. Mitsubishi's proposed construction reflects this claim language by specifying that the connection point is where "the lower part and the upper part are joined together to form the base frame."

The specification confirms that the connection point is the location where the upper and lower parts of the base frame are joined together. In the exemplary embodiment, the upper and lower parts of the base frame "each have a flange … directed inside at the connection point." '055 patent, col. 5:34-36. Bolts passing through these flanges connect the upper and lower parts together, forming the base frame. *Id*. at col. 5:36-44. The abstract of the patent explains that "[b]oth parts are pre-assembled at the factory, set onto the tower, and screwed tight onto each other at their connection point." *Id*. at Abstract. Thus, the connection point denotes the joinder of the two parts of the base frame.

The '055 patent's prosecution history confirms that the two parts recited in claim 1 are joined together, not merely in contact, at the connection point. As originally filed, claim 1 recited that the upper and lower parts of the base frame were "combined" at the connection point. During prosecution, however, GE amended claim 1 to specify that the two parts of the base frame are "attachably joined" at the connection point. Ex. 5 at 2. GE then distinguished the Partmann reference by arguing that the reference did not disclose "a connection point where the upper part of the frame attachably joins to the lower part of that frame." *Id*. at 8.

In a subsequent submission to the PTO, GE again emphasized that "[c]laim 1's discrete parts are put together to form a complete mechanical unit." Ex. 6 at 10. In particular, GE argued that claim 1 differed from the Jacobs prior art reference because "Jacobs is only disclosing two pieces that do not form a complete working device." *Id*. at 10-11. Thus, the patent's prosecution history confirms that the upper and lower parts recited in claim 1 must be joined together to form a unitary base frame, as reflected in Mitsubishi's proposed construction.

GE proposes a construction that omits the requirement of a "connection" and substitutes a vague, undefined "area of contact" for the "connection point" recited in the claim. Nowhere does the '055 patent suggest that mere contact between two components can substitute for a true connection. Indeed, the word "contact" appears nowhere in the patent. And the claim language and prosecution history clearly require that the two parts of the base frame be attachably joined at the connection point. GE's construction, however, would cover a partially assembled base frame with an upper part merely sitting atop a lower part, whether or not they are bolted together—effectively removing the requirement of "connection" from the claim.

Because Mitsubishi's proposed construction more closely follows the claim language and the other intrinsic evidence, it reflects the meaning that one of ordinary skill in the art would attach to the language of claim 1. *Phillips*, 415 F.3d at 1513.

2. The claimed "connection point" joins parts of the base frame

Mitsubishi's proposed construction further reflects that the claimed connection point is limited to the connection that joins the upper and lower parts of the base frame—which the parties agree is "the support structure that carries the drive drain and the azimuthal drive device." *See supra* at 7. The intrinsic evidence reveals that connections with other wind turbine components—such as the cover, the drive train, or the tower—cannot correspond to the claimed connection point. Thus, as recognized by Mitsubishi's proposed construction, the claimed

connection point is where the lower part and the upper part are joined together "to form the base frame."

Claim 1 recites "**a base frame** … constructed from a discrete upper part … and a discrete lower part." The claim separately recites other features, including the wind turbine tower and the drive train. From this language, a person of ordinary skill in the art would understand that the "upper part" and "lower part" joined at the connection point are parts of the support structure that carries the drive train and the azimuthal drive device.

The '055 patent repeatedly states that the purported invention developed by the applicants lies in the base frame. The specification begins by saying that "[t]he invention involves a **base frame** for the arrangement of a drive train on the tower of a wind power plant." '055 patent, col. 1:5-6 (emphasis added). The patent's title—"Base Frame for Mounting the Shaft of the Rotor of the Wind Power Plant onto the Plant Tower"—similarly focuses on the base frame. The abstract of the patent does the same, explaining that "a two-part base frame is proposed." *Id*. at Abstract. The stated "purpose of the invention," moreover, is to "create a base frame, … which makes it easier to accomplish transport and assembly work … while having sufficient stability." *Id*. at col. 1:36-40. These statements confirm that the base frame, not other components, form the claimed invention. *See Honeywell*, 452 F.3d at 1318.

The patent consistently distinguishes the base frame from other wind turbine components. The specification explains that the "base frame is affixed onto the tower" and the upper part of the base frame "carries the drive train." '055 patent, col. 1:7-14. Claim 1 makes parallel recitations. The wind turbine described in the specification includes a "housing, … in which the drive train is arranged," *id*. at col. 1:19-20, but no claim of the patent recites this housing.

Instead, all of the patent's claims focus on the base frame. From this, it is clear that the claimed connection point joins parts of the base frame, not other turbine components.

Likewise, during prosecution of the '055 patent, GE stressed that the connection point is "where the upper part of the **frame** attachably joins to the lower part **of that frame**." Ex. 5 at 8 (emphasis added). In addition, GE distinguished its base frame from the Jacobs prior art reference on the grounds that Jacobs's "second part is merely a cover." Ex. 6 at 11. Those arguments by GE to the PTO examiner show that the claimed connection point joins the two parts of the base frame to one another and does not include connections to a "cover."

Mitsubishi's proposed construction specifies that the "lower part" and the "upper part" are "joined together to form the **base frame**." By emphasizing that the connection point joins two parts of the base frame—not parts of the wind turbine cover, drive train, tower, or other components—Mitsubishi's construction conforms with the manner in which a person of ordinary skill in the art would read the claim in view of the intrinsic evidence.

GE's construction, on the other hand, uses loose language, leaving the scope of the claim ambiguous. Because GE's proposed construction makes the claim scope less precise and lacks support in the intrinsic evidence, it should be rejected.

3. The claimed connection point is not an "area"

Claim 1 of the '055 patent explicitly recites a "connection **point**," a term used throughout the specification to refer to the particular location at which the upper and lower parts of the base frame are joined together. GE's proposed construction substitutes an ambiguous "**area** of contact" for the claimed connection point. This is an important distinction. For example, in the case of the prior art base frame having a rectangular upper part joined to a circular lower part by bolts arranged in an elongated pattern, the "area of contact" may differ from the location where the upper and lower parts are joined.

Mitsubishi's proposed construction is supported by the intrinsic evidence. The language of claim 1 requires that the upper and lower parts of the base frame attach at a connection point, not rest in contact in some undefined region. Similarly, the specification uses the term "connection point" to refer specifically to a precise location—where the upper part of the base frame is attachably joined to the lower part of the base frame. '055 patent at col. 1:7-14, 6:8-12.

GE's proposed construction, in contrast, lacks intrinsic support. The specification never refers to the base frame's connection point as an "area of contact." Rather, the specification uses the term "area" to connote a loose sense of proximity. For example, the specification explains that "in the upper part in its **area** that faces the rotor, a recess for a rotor shaft bearing is constructed." *Id*. at col. 3:12-16 (emphasis added). Similarly, it states that "the **area** of the hollow body facing the rotor projects outwards from the bottom to the top … ." *Id*. at col. 3:7-10 (emphasis added). Further, the patent discloses constructing the base frame "in such a manner that each of the two parts have, in the **area** of the connection point, **a flange** that is essentially radial in relation to the tower axis … ." *Id*. at col. 2:36-40 (emphasis added). Nor does the prosecution history illustrate any attempt to redefine the claim in the terms GE now suggests.

By substituting a loose concept of "area" for the precisely claimed connection "point," GE's proposed construction omits an important concept and adds ambiguity to the claim. Thus, GE's proposed construction should be rejected because it lacks support in the intrinsic evidence and makes the scope of the claim less clear.

In sum, Mitsubishi's proposed construction of "connection point" addresses an important ambiguity in the claim and is supported by the intrinsic evidence. GE's proposed construction, in contrast, leaves the claim ambiguous and lacks intrinsic support. For these reasons, the Court should adopt Mitsubishi's proposed construction.

V. THE ’705 PATENT

A. Overview of the ’705 Patent and the Parties’ Dispute

The ’705 patent describes a method of configuring an electrical machine, such as a wind turbine, to remain connected to the utility grid during grid voltage fluctuations. The method described by the patent places no time limits on the wind turbine’s ability to remain connected. Rather, by switching between several operating modes, the ’705 patent enables the wind turbine to remain connected with the grid indefinitely, unless harmful operating conditions arise. In contrast, Mitsubishi’s wind turbine disconnects from the utility grid if a grid voltage fluctuation does not end within a prescribed period of time.

The asserted claim of the ’705 patent requires configuring an electrical machine to remain connected to an electric power system, such as the utility grid, for an “undetermined period of time” during and subsequent to voltage fluctuations. The parties dispute whether this claim limitation requires configuring a wind turbine without placing limits on the length of time it can remain connected to the utility grid when the voltage fluctuates. The language of the claims, as well as the other intrinsic evidence of record, requires the absence of time limits.

B. Asserted Claim of the ’705 Patent

GE has asserted only claim 1 of the ’705 patent. The parties dispute the construction of only two phrases, indicated in bold below. Each disputed phrase requires configuring the electrical machine (and, in one case, its control system) such that it remains connected to the electric power system for an “undetermined period of time.”

> 1. A method for operating an electrical machine, said method comprising:
>
> coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine; and
>
> **configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range for an undetermined period of time**, said configuring the electrical machine comprising:
>
> electrically coupling at least a portion of a control system to at least a portion of the electric power system;
>
> coupling the control system in electronic data communication with at least a portion of the electrical machine; and
>
> **configuring the electrical machine and the control system such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZRVT).**

The parties agree that the claim term "electrical machine" should be construed as "a device that can convert mechanical energy to electrical energy or electrical energy to mechanical energy." The parties respectfully ask the Court to adopt this proposed construction.

C. Additional Intrinsic Evidence Relevant to Construing the Asserted Claim

In addition to the claim language of the '705 patent, requiring that the electrical machine "remains electrically connected" during a voltage fluctuation of "an undetermined period of time," the specification and prosecution history are important in construing the disputed phrases.

1. Specification of the '705 patent

The '705 patent discloses a method of configuring an electrical machine, such as a wind turbine, to remain connected to the utility grid in case of grid voltage fluctuations. In particular, the patent teaches configuring a wind turbine to operate in several different states (or modes), depending on the value of grid voltage. '705 patent, col. 8:49-55. These different operating

states enable the electrical machine to remain connected to the utility grid irrespective of the duration of grid voltage fluctuations. *Id*. at col. 8:61-64.

Figure 5 of the patent, reproduced below, illustrates the four operating states—labeled as states 0, 1, 2, and 3—of the wind turbine described in the '705 patent.

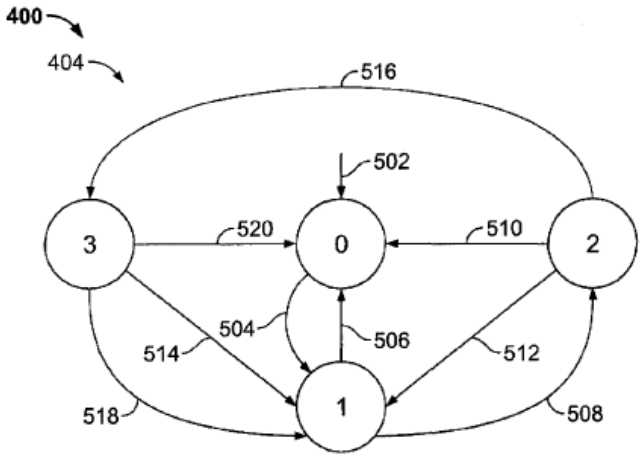


FIG. 5

The patent teaches that switching between these different states enables the wind turbine to remain connected to the utility grid in the event of voltage drops. *Id*. at col. 8:61-67. These operating states allow for both low-voltage operation (when grid voltage is outside of a predetermined range) and zero-voltage operation (when grid voltage drops to zero volts). By changing states, the wind turbine switches between "aggressive" and "non-aggressive" parameters within a computer processor, ensuring that the electricity output by the wind turbine remains "synchronized" with the electricity on the utility grid.[5] *Id*. at col. 8:55-67. Using this

[5] This computer processor (called a "PLL regulator") controls the frequency of the electricity output by the wind turbine so that it matches, as closely as possible, the frequency of the electricity on the utility grid (as measured at a grid bus (242)). '705 patent, col. 7:12-25. The PLL regulator "locks on" to the frequency of electricity on the grid, using it to control the output of the wind turbine. *Id*. at col. 7:24-25. When the PLL regulator is locked on to the frequency of the electricity on the utility grid, the wind turbine is said to be "synchronized" with the grid.

method, the wind turbine's generator may remain connected to the grid for an "undetermined period of time," even during grid voltage fluctuations. *Id.* at col. 8:32-37.

The method described in the '705 patent uses various criteria to shift the wind turbine from one operating state to another. When the wind turbine begins operation, it occupies a start-up state—state 0 in the figure above—for a predetermined period of time. *Id*. at col. 9:6-9, 9:35-41. After this predetermined period of time passes, the wind turbine transitions from start-up state 0 to state 1. *Id*. at col. 9:35-41.

While in state 1, the wind turbine sets its operating parameters to values intended to allow it to initially synchronize its output ("lock on") to the grid frequency. *Id*. at col. 9:48-62. Absent harmful operating conditions, the wind turbine remains in this state until it synchronizes to the grid frequency. *Id*. at col. 9:63-66. After the wind turbine achieves synchronization with the grid, it waits for a predetermined period of time, then transitions to state 2. *Id*.

The wind turbine occupies state 2 during normal grid operation and will remain in this state so long as only normal, minor fluctuations of grid voltage occur. *Id*. at col. 10:23-25. If the wind turbine senses a grid fault—such as abnormally low, but non-zero, voltage or abnormally high grid voltage—the wind turbine will move from state 2 back to state 1 so that it can resynchronize with the grid. *Id*. at col. 10:26-31. If grid voltage drops to zero volts, the wind turbine will transition to state 3, which is specifically intended to allow for zero-voltage ride through. *Id*. at col. 10:46-49.

The patent teaches that state 3 facilitates zero-voltage ride through (ZVRT). *Id*. In this operating mode, the wind turbine sets the frequency of output electricity as if "there was no grid disturbance." *Id*. at col. 10:59-62. By so doing, the patent teaches that the "potential for wind turbine generator trip is mitigated and ZVRT is facilitated." *Id*. at col. 10:65-67. Unless harmful

operating conditions arise, the wind turbine will remain in state 3 until grid voltage is restored. *Id.* at col. 11:1-2, 11:15-19.

The '705 patent describes two examples of operating conditions that may cause the wind turbine to disconnect from the grid to prevent damage to components within the wind turbine. First, the specification teaches disconnecting the wind turbine from the grid if excessive current flow is detected during a grid voltage fluctuation. *Id*. at col. 5:26-29, 6:47-55. And second, the specification teaches disconnecting the wind turbine from the grid if the wind turbine's rotor accelerates to an excessive speed during a grid voltage fluctuation. *Id*. at col. 6:44-46. These conditions are both based on sensed parameters, not the passing of a preset time period. The patent teaches that these harmful conditions may occur in any of operating states 1, 2, or 3, causing the wind turbine to transfer to state 0 and to electrically disconnect from the utility grid. *Id*. at col. 9:43-47, 10:1-4, 11:15-19. Thus, the '705 patent teaches configuring a wind turbine to rely on parameters other than time to disconnect from the grid.

The patent's specification stresses that the disclosed wind turbine remains electrically connected to the electric power system during grid voltage fluctuations despite the passage of time. In particular, the patent states that its system remains connected "during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range for an undetermined period of time." *Id*. at col. 8:29-42. This description, echoed in both the patent's abstract and its "brief description of the invention," illustrates that the inventors contemplated a wind turbine that would remain connected to the utility grid without time limitations. Indeed, as discussed above, the detailed description of the wind turbine sets forth a configuration that will allow low-voltage ride through (in operating state 1) until grid voltage is restored to predetermined values or harmful operating conditions cause the wind turbine to

disconnect from the grid. *Id*. at col. 10:35-40, 9:43-46. Claim 1—the only claim of the '705 patent asserted by GE—similarly requires configuring an electrical machine to remain electrically connected to the electrical power system for an "undetermined period of time."

The '705 patent also expressly teaches that time limits do not terminate zero-voltage ride-through operation. In particular, column 8 of the specification states that the disclosed method includes:

> configuring generator 118 such that the generator 118 remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range **for an undetermined period of time**. Specifically, such method includes configuring generator 118 such that generator 118 remains electrically connected to the grid during and subsequent to a voltage amplitude of the electric power decreasing to approximately zero volts **for a predetermined period of time** … .

Id. at col. 8:32-42 (emphasis added). Taken together, these sentences indicate that the wind turbine remains connected for a minimum predetermined amount of time if grid voltage drops all the way to zero (during which the wind turbine will not disconnect from the grid regardless of possible harmful operating conditions). In other words, even when the grid voltage drops to zero, the wind turbine does not disconnect based on time. Rather, the wind turbine will remain in its zero-voltage operating state (state 3) until either (1) grid voltage recovers or (2) the predetermined period of time expires **and** harmful operating conditions cause the wind turbine to disconnect from the grid. *Id*. at col. 11:1-4, 11:15-19.

2. Prosecution history of the '705 patent

During the '705 patent's prosecution, GE amended claim 1 to require "zero voltage ride through" for an undetermined period of time. As originally filed, claim 1 did not require the claimed electrical machine to remain connected to an electric power system when grid voltage dropped to "approximately zero volts." The PTO examiner rejected claim 1 over a combination

of two prior art references, Weng et al. (U.S. Published Patent Application No. 2007/0132248) and Janssen et al. (U.S. Published Patent Application No. 2004/0145188), describing systems configured to allow for low-voltage ride through. Ex. 7 at 2.

GE did not dispute these characterizations of the prior art. Instead, GE amended claim 1 to require configuring the electrical machine and control system so that the electrical machine remains connected to the electric power system "during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZRVT)." Ex. 8 at 2. GE did not characterize the meaning or effect of this addition, other than stating that "independent Claim 1 has been amended to include all the recitations of dependent Claim 2, which the Examiner indicated included allowable subject matter." *Id.* at 11. The PTO examiner allowed the claim in response to this amendment.

D. Proper Construction of the Disputed Claim Terms of the '705 Patent

Claim 1 of the '705 patent reflects the fundamental concept described in the patent specification: configuring an electrical machine to remain connected to the utility grid when utility grid voltage fluctuates, unrestricted by time limits. The only method of configuring an electric machine described in the patent uses special operating states to allow for low-voltage operation, as well as zero-voltage operation, unbounded by time. Operating parameters that are not based on time—current flow and rotor speed—are used to disconnect the wind turbine described in the specification from the utility grid.

The parties dispute the meanings of two claim phrases, each requiring the electrical machine to remain connected to the electric power system for an "undetermined period of time." Looking to the intrinsic evidence, Mitsubishi contends that these two phrases be understood to preclude the placement of time limits on the period for which the electrical machine is

configured to remain connected to the electric power system. GE, on the other hand, contends that the two phrases only require that the electrical machine remain connected for a "time period not determined in advance." Reading the claim to preclude time limits—as proposed by Mitsubishi—best holds true to the meaning of "undetermined period of time" and best reflects the system described in the patent, which looks to harmful operating conditions, not time, to disconnect the wind turbine from the grid.

1. "configuring the electrical machine such that the electrical machine remains electrically connected … for an undetermined period of time"

"configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range for an undetermined period of time"	
GE's Proposed Construction	**Mitsubishi's Proposed Construction**
setting up the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a range determined in advance for a time period not determined in advance	setting up the electrical machine such that the electrical machine remains connected to the electrical power system during and subsequent to the voltage amplitude operating outside of a predetermined range, with no time limits placed on the period of time the machine remains connected to the electric power system when the voltage is outside the range

By its plain language, the first configuring step of claim 1 precludes the use of time as a limiting factor for low-voltage ride through. The claim expressly requires configuring the electrical machine so that it "remains electrically connected … for an undetermined period of time." Setting time limits cannot correspond to configuring a machine to remain connected for an "undetermined period of time." Thus, the language of the claim—the starting point for every claim construction analysis under *Phillips*—supports Mitsubishi's proposed construction.

The specification of the '705 patent confirms that claim 1 should be construed to exclude electrical machines that remain connected to the utility grid for only a preset time when grid

voltage is outside of a predetermined range. The specification describes only one way to configure a wind turbine in accordance with the purported invention of claim 1—allowing a wind turbine to remain connected to the utility grid until "restoration of grid voltage" or harmful operating conditions end low-voltage operation. '705 patent, col. 10:35-40, 9:43-47, 11:1-4, 11:15-19. Thus, the wind turbine described in the patent does not use a time limit to disconnect from the grid. One of ordinary skill in the art would understand claim 1 to require configuring a wind turbine to operate in the same way. *Phillips*, 415 F.3d at 1323.

When grid voltage drops, the wind turbine described in the specification switches to its low-voltage operating state—state 1—and waits for the grid voltage to return to normal values. '705 patent, col. 10:26-40. The wind turbine stays connected to the grid and remains in state 1 until grid voltage returns to normal, unless the wind turbine detects a harmful condition such as excessive current flow or rotor speed. *Id*. at col. 9:43-47, 5:26-29, 6:37-55. No alternative embodiment is suggested, and nothing in the specification suggests limiting the duration of this operating state based on time. In view of this exemplary embodiment, one of ordinary skill in the art would understand the patent to disclose configuring a wind turbine without time limits to allow connection for an "undetermined period of time."

Similarly, if grid voltage drops to zero volts, the wind turbine described in the specification switches to its zero-voltage operating state—state 3—and waits for the "restoration of grid voltage." *Id*. at col. 11:1-4. The wind turbine stays connected to the grid and remains in operating state 3 until grid voltage is restored, unless the wind turbine detects a harmful condition. Again, no alternative embodiment is disclosed, and nothing in the specification suggests limiting the duration of this operating state based on time. Thus, the zero-voltage

operating mode, like the low-voltage operating mode, teaches a configuration that places no time limits on zero-voltage operation, consistent with the claim construction proposed by Mitsubishi.

As noted above, the specification also suggests that a wind turbine may remain connected to the grid when "a voltage amplitude of the electric power decreas[es] to approximately zero volts for a predetermined period of time." *Id*. at col. 8:37-46. This embodiment, which is recited in claim 7 of the '705 patent, is consistent with Mitsubishi's proposed claim construction and the teachings of the remainder of the specification. In particular, requiring connection for at least a minimum period—without specifying an upper limit on the period that the wind turbine can remain connected—guarantees zero-voltage ride through for at least the predetermined period, while still allowing the wind turbine to remain connected to the electric power system for an indefinite, "undetermined" period of time absent harmful operating conditions.[6] A wind turbine configured in this manner would meet, and often exceed, the zero-voltage ride-through standards required by utility standard-setting organizations, which allow disconnection from the grid if grid voltage remains at zero volts for more than a short time.

The prosecution history of the '705 patent is also consistent with configuring an electrical machine without time limits. The PTO examiner rejected claim 1 as being obvious over prior art references that taught a wind turbine coupled to a power system that operated outside of a range for an undetermined time. Ex. 7 at 2-3. GE did not dispute this rejection, but instead amended claim 1 to require zero-voltage ride-through capability. Ex. 8 at 2, 11. Nothing in the PTO examiner's rejection or GE's amendment of claim 1 suggests that the claim allows the use of a

[6] A contrary reading of this sentence, requiring the wind turbine to ride through only an exact "predetermined period of time," would clearly be at odds with achieving low-voltage ride through for an "undetermined period of time," rendering the specification internally inconsistent.

predetermined time to limit the period that the wind turbine remains connected to the utility grid in case of voltage fluctuations.

GE proposes that the Court merely paraphrase the term "undetermined time" and substitute the words "time period not determined in advance." GE's position ignores the pricinple that "[t]he claims are directed to the invention that is described in the specification; they do not have meaning removed from the context from which they arose." *Phillips*, 415 F.3d at 1316 (quoting *Network, LLC v. Centraal Corp.*, 242 F.3d 1347, 1352 (Fed. Cir. 2001)). Moreover, simply substituting "not determined in advance" for "undetermined" will do nothing to resolve the chief ambiguity of this term in the context of this case: whether the claim language encompasses placing a limit on the time that the electrical machine remains connected to the utility grid when grid voltage fluctuates. GE asks the Court to leave this ambiguity for another day, defeating the purpose of claim construction.

In sum, Mitsubishi asks the Court to resolve an ambiguity by considering the language of the claim together with the other intrinsic evidence. Collectively, the language of claim 1, the specification, and the prosecution history point to the benefits of a wind turbine configured to remain connected to the utility grid indefinitely, so long as harmful operating conditions do not arise. In view of this intrinsic evidence, one of ordinary skill in the art would understand claim 1 to require that no time limits be placed on how long the machine can remain connected to the electric power system when the voltage amplitude of the electric power system operates outside of a predetermined range.

2. "configuring the electrical machine and the control system such that the electrical machine remains electrically connected … for the undetermined period of time, thereby facilitating zero voltage ride through (ZRVT)"

"configuring the electrical machine and the control system such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZRVT)"	
GE's Proposed Construction	**Mitsubishi's Proposed Construction**
setting up the electrical machine and the control system such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the range determined in advance, including approximately zero volts, for the time period not determined in advance, thereby facilitating zero voltage ride through (ZVRT)	setting up the electrical machine such that the machine remains connected to the electric power system during and subsequent to the voltage amplitude decreasing below the defined range, including to approximately zero volts, with no time limits placed on the period the machine remains connected to the electric power system when the voltage is below the range

Claim 1 of the '705 patent contains a second disputed phrase, requiring configuring the electrical machine (and its control system) to remain connected to the utility grid when the voltage amplitude of the electric power system decreases to "approximately zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZRVT)." This "configuring" phrase parallels the first "configuring" phrase in claim 1, except that it specifies that the "voltage … outside of a predetermined range" includes "approximately zero volts." Like the first "configuring" phrase, this phrase precludes time limits being placed on the duration of the ride-through.

The specification of the '705 patent teaches only one method for configuring an electrical machine. This method facilitates both low-voltage ride through (LVRT) and zero-voltage ride through (ZVRT). In particular, using the method described in columns 8-11 of the specification,

the wind turbine is configured to have both a low-voltage operating state (state 1) and a zero-voltage operating state (state 3). The specification teaches that this configuration is capable of "facilitate[ing] zero voltage ride through (ZVRT)," just like the second configuring step of claim 1. *See, e.g., id.* at col. 8:47-67. One of ordinary skill in the art would understand both pheases to require configuring a wind turbine in a manner similar to that described in the specification.

The method of configuring a wind turbine taught in the specification of the '705 patent allows for zero-voltage ride through for an indefinite period of time, so long as harmful operating conditions do not arise. The wind turbine remains in its zero-voltage operating state until "restoration of grid voltage," unless excessive current flow or rotor speeds require disconnection from the grid. '705 patent, col. 11:15-19, 5:26-29, 6:37-55. One of ordinary skill in the art would accordingly read the second configuring step of claim 1 to require that no time limits be placed on the ability to ride through zero-voltage events.

When GE added the second configuring phrase to claim 1 during its PTO prosecution, it made no statements suggesting that the claim encompassed systems having a predetermined time limit on ride-through capability. Rather, GE relied solely on the PTO examiner's previous statement that the second configuring step was allowable over the applied prior art. Thus, the prosecution history does not suggest the use of time limits in the second "configuring" phrase.

In sum, given the claim language, the fact that the specification describes a wind turbine that remains connected during and after ZVRT despite the passage of time, and the consistent prosecution history, one of ordinary skill in the art would understand the second "configuring" phrase of claim 1 should be construed like the first "configuring" phrase—i.e., to require that no time limits be placed on the length of time that the electrical machine will remain connected to the electrical power system during voltage fluctuations.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the above and foregoing instrument has been served via the Court's ECF system on all known counsel of record in accordance with the Federal Rules of Civil Procedure on this the Sixth day of December 2010.

/S Lane Fletcher

Lane Flectcher